
PACIFIC GAS & ELECTRIC COMPANY *v.* CITY
AND COUNTY OF SAN FRANCISCO.

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APPEALS FROM THE DISTRICT COURT OF THE UNITED STATES
FOR THE NORTHERN DISTRICT OF CALIFORNIA.

Nos. 34-36. Argued April 17, 1923; restored to docket for reargument November 27, 1923; reargued February 19, 1924.—Decided June 2, 1924.

1. The evidence supports a finding that a net return of 7 per cent. was necessary to avoid confiscation, in the fixing of the appellant company's gas rates by public authority. P. 405.
2. In determining the amount deductible for accrued depreciation when valuing the property of a public utility for the purpose of testing the adequacy of rates during a period already elapsed, estimates of competent experts based on examination of the plant subsequent to the depreciation are preferable to averages based on assumed probabilities. P. 406.

3. Where depreciation is due partly to physical causes and partly to obsolescence resulting from improvements in the plant, the amounts should be found separately if practicable. P. 406.
4. Rate-making is not a function of the courts; their duty is to examine results and uphold the guaranties which inhibit the taking under any guise of private property for public use without just compensation. P. 415.
5. In a suit to enjoin enforcement of rates as confiscatory, a claim of a public utility for past services can not be relegated to the consideration of a state commission in the future when it adjusts the rates for future years. *Id.*
6. Where a gas company acquired patent rights which proved very valuable in lessening the cost of producing gas, but necessitated new outlays and rendered parts of the existing plant obsolescent, *held*:
- (a) That the true value of the patent rights, and not merely the money actually paid for them, must be allowed for as part of its property, in gauging the adequacy of rates fixed by a city. P. 415.
- (b) As the obsolescence could not have been long anticipated it was not imperative, if possible, that the company should have provided for it out of the revenues of years preceding those in question. *Id.*
- (c) To allow only the cash paid for the patent rights, and nothing for the obsolete property, in arriving at the rate base, resulted in confiscation. *Id.*
- 273 Fed. 937, reversed.

APPEALS from decrees of the District Court dismissing the bill in three suits brought by the appellant company to prevent the enforcement of ordinances passed by San Francisco in three successive years, to reduce the price of gas.

Mr. Louis Titus, with whom *Mr. Wm. B. Bosley* was on the briefs, for appellant.¹

Mr. Robert M. Searls, with whom *Mr. George Lull* and *Mr. John J. Dailey* were on the briefs, for appellees.

¹At the first hearing, the cases were argued by *Messrs. Titus and Bosley*, on behalf of the appellant.

MR. JUSTICE McREYNOLDS delivered the opinion of the Court.

Since 1905 appellant has been the sole producer and general distributor of heating and illuminating gas in the San Francisco district. By three separate ordinances passed in June of 1913, 1914 and 1915, the Board of Supervisors directed it to supply such gas during the fiscal year commencing July first thereafter at not more than seventy-five cents per thousand feet. Claiming that the rate so prescribed would not yield fair return, appellant brought suits in July, 1913, 1914 and 1915, to prevent enforcement of the respective ordinances. Restraining orders issued upon condition that monthly statements should show each consumer's account and bond should be given to secure proper repayments with interest. The maximum rate in the schedule thereafter maintained was eighty-five cents per thousand.

December 15, 1916, the causes were consolidated and referred to a master. After taking much testimony he presented an elaborate report, March 2, 1920, which recommended dismissal of the bills and repayment of whatever had been collected above the prescribed rate. The District Court affirmed the report and directed an appropriate decree.

The master found that not less than seven per centum net upon the value of the property devoted to public use was necessary for a fair return; also that if observed the prescribed rate would have yielded more than seven per centum—for 1913-1914, an excess of \$21,402.95; for 1914-1915, \$89,446.12; and for 1915-1916, \$171,464.48.

We think the evidence supports the finding that a net return of seven per centum was necessary in order to avoid confiscation.

The inventory of the many items making up appellant's manufacturing and distributing plant with their reproduc-

tion cost new was agreed upon by the parties. In order to determine accrued depreciation and ascertain true values during the years 1913-1916, the master applied the "modified sinking fund method." Concerning this he said: It involves "an estimate of the lives of the different structural units, and an annual allowance set aside from the rates received as a reserve for future replacement on a 5 per cent. compound interest curve, the capital basis of return to the owner being depreciated each year in an amount exactly corresponding with yearly additions to the reserve. It is assumed that loss of plant units by obsolescence and inadequacy, as well as by physical decay, can be forecast with substantial accuracy and provided for in advance of abandonment and replacement."

Appellant objects to the application of this method and insists that depreciation should have been ascertained upon full consideration of the definite testimony given by competent experts who examined the structural units, spoke concerning observed conditions and made estimates therefrom. As these examinations were made subsequent to the alleged depreciation for the definite purpose of ascertaining existing facts, we think the criticism is not without merit. Facts shown by reliable evidence were preferable to averages based upon assumed probabilities. When a plant has been conducted with unusual skill the owner may justly claim the consequent benefits. The problem was to ascertain the probable result of the specified rate if applied under well known past conditions, not to forecast the probable outcome of a proposed rate under unknown future conditions.

Counsel do not insist that the estimated accrued depreciation is "grossly excessive," if confined to the result of physical causes. But they do maintain that the master should have ascertained and stated what depreciation was due to such causes and how much followed obsoles-

cence resulting from the introduction of certain patented inventions; and we think such a finding should have been made unless some undisclosed reason prevented. The claim is that in order to lower cost of production it became necessary to abandon certain valuable property under conditions not reasonably susceptible of anticipation. The material and relevant facts ought to be disclosed.

The objection to the report most seriously urged is that in his estimate of total value the master failed properly to appraise certain patent rights through which manufacturing costs had been greatly reduced; also, that he failed to make proper allowances for the successful use of such rights. This objection is well taken. The following excerpts from the master's long and rather involved report disclose the contested points with the relevant facts and indicate his conclusions.

"The company contends that its plant capital, as a basis of earnings, should suffer no deduction because of supposed depreciation due to age, but only, if at all, by the amount of 'deferred maintenance.' And where, as here, there have been abandonments of large units due to obsolescence, the loss should be reimbursed by amortization over a period of years after, rather than before, the replacement, this amortization being effected by dividing the economies resulting from new machines and processes between owner and consumer, thus allowing a partial reduction in the rate. . . .

"Until this case it had not occurred to me that, so far as theory is concerned, reimbursement of the owner could take place after abandonment. It would not seem fair if it involved a raise of rates. Physical depreciation, for example, if an accumulation is necessary to provide for replacement, ought to be provided beforehand from the rates of users of the service which caused the machine to wear out. But where replacement is made on account of obsolescence or inadequacy, and economy is effected in

costs, that economy can with fairness be devoted to reimbursement for the replacement cost, the rates remaining unchanged. I know of no well-considered method to meet this reimbursement after the fact. The installments would have to include interest on the unpaid principal and capital would thus not be depreciated for purposes of return. An estimate of the period of amortization would not have to be made if all economies of the new machine were devoted to the amortization; it would work itself out. If the economies were shared with the ratepayer, as plaintiff here suggests, the period should not extend beyond the estimated life of the new machine; a plan which is subject to the objection on the grounds of uncertainty common to all such estimates. . . .

"But where, as here, and as is generally the case, there is nothing to show what, if any, consideration has been given the question of depreciation methods by the state authorities, or anything beyond a bare schedule of rates to be charged, then the court must determine the proper methods by its own independent judgment. I have tried to make it clear that in the usual case the modified sinking fund method would seem most applicable. Notwithstanding this, in cases where it had not been the practice to accumulate a reserve, and where the cost of replacements has shown itself to be a fairly uniform amount, or a fairly uniform percentage of income or of capital, then there is no objection in sound reasoning, nor, as I believe, in the law as laid down, why the court should not adopt a replacement method in determining proper costs of production; and in such event it would rate at replacement cost new to determine the owner's reasonable return and include actual average replacement requirements in the yearly costs, without reserves. Or it might figure on a reserve for part of the plant, and a replacement method for the balance apparently adapted to it. Conceivably, also, the court might amortize the loss by obsolescence

after abandonment had taken place, as plaintiff urges here. But I imagine that any court will feel the same hesitation in so doing that I feel here, for it involves reimbursement as to structures no longer in the inventory of units in service, and is without precedent except where the rate-fixing body has laid it down as a proper policy. . . .

"Mr. E. C. Jones, chief gas engineer of plaintiff, also testified that the plant was worth cost new less only the deferred maintenance and the amount of abandonments immediately in prospect. He estimates the amount of this deduction at \$828,916.41 (Exhibit 43), or 6.3 per cent. of his appraisal at \$13,066,201.55 (Exhibit 3). His estimate includes no consideration of approaching obsolescence; it does include replacement reasonably in view, due to physical deterioration, and to ordinary inadequacy. . . .

"I have referred several times to plaintiff's contention that obsolescence should be amortized after rather than before abandonment of a unit of plant. Specifically applied, it is urged that when it is seen that Martin station or other obsolete generator has been superseded by new Jones generators, using the improved Jones process for oil-gas, the demonstrated economies thereby effected are justly to be devoted to reimbursing the company for the loss of capital occasioned by the obsolescence, continuing each year until the loss is made good, with interest. On this settled program the new generator would, of course, be rated for return at replacement cost new at all times. To give the consumer a part of the advantages of the improvement, the company proposes that only half of the very considerable economies of operation shall be devoted to its reimbursement. Many advantages are urged for this plan: That it throws upon the consumer, who has the benefit of the new equipment in the shape of reduced charges, the burden of the loss by supersession of equip-

ment otherwise in good condition; that it avoids the defect that is inherent in a system of setting aside reserves in advance of abandonment, namely, that while the life of a depreciable unit is difficult enough to estimate when physical decay alone is considered, it is practically impossible to forecast when we consider that obsolescence and inadequacy, which usually account for abandonments in a gas manufacturing plant, follow no rule as to time of their operation; that, finally, progress in service is promoted by giving a gas company an incentive to improvement of its machinery and its processes in the shape of increased profits. It must be admitted that if replacement of an old machine has not been sufficiently provided for by reserves in advance, a company will naturally defer installing a new machine, and so progress is halted. It is, furthermore, true that the application of the usual formula, fair return on fair present value of the plant in service, gives to the consumer all the advantages of economies in operating costs, which plainly is not entire justice. The City's counsel agrees (Argument 451) that if obsolescence had occurred suddenly, with no opportunity to create reserves for replacement, the loss should be amortized after abandonment; but he denies that the facts here conform to the hypothesis. . . .

"Mr. E. C. Jones, chief gas engineer of plaintiff, and his son, Mr. Leon B. Jones, assistant gas engineer, on an application filed May 23, 1912, were on March 10, 1914, granted United States Letters Patent for an improved apparatus for manufacturing oil-gas; and on October 19, 1915, on an application also filed May 23, 1912, were granted letters for the process. On November 30, 1915, they granted to plaintiff the exclusive right to use the process, and to make and use, but not to sell, the apparatus, together with future improvements in either process or apparatus made during the lives of the patents; the rights granted being transferable, but restricted as to place

to a number of named counties in northern and central California. Despite the late date of the grant, plaintiff's beneficial right covered the period in suit, for the prior installation of generators embodying the Jones patents at the Metropolitan and the Potrero stations, with the patentees' consent, conferred an implied license to use them during their life in the San Francisco district; but this license was not exclusive. The contract underlying the grants (Exhibit 61) recited that the Company had permitted the patentees to use its plant and facilities for experimentation and commercial demonstration of their inventions; had expended in alterations in its Metropolitan plant a sum exceeding \$100,000, and also had expended in erecting two new gas generators at the Potrero station embodying the inventions a sum exceeding \$215,000; that continued operation of all said new or altered apparatus under the patentees' direction had demonstrated the great utility and value of the inventions and that they could be utilized 'to the great pecuniary advantage' of the plaintiff Company; that the Company had allowed the patentees to exhibit the apparatus to many persons interested in gas manufacture in this country and Europe as a demonstration of the utility and value of their inventions, and that the patentees regarded the privilege of future such exhibitions as of great value to them. It was then agreed that for the grants first above referred to the Company would pay the patentees the sum of \$46,066.67, and would allow full opportunity for future exhibition of the generators, and so forth.

"The question is, at what figures these rights of the Company shall be taken into the rating base? It seems to be agreed that the amount actually paid in 1915 is already represented in the amount hitherto added as additions and betterments.

"The presentation of plaintiff's case in the form approved by its counsel does not primarily involve the giv-

ing of a value to these patent-rights. Counsel in argument stated in substance that the evidence as to their value seemed to involve such enormous sums that he preferred the more conservative course of giving them consideration in his conception of the proper treatment of losses by obsolescence. It will be remembered that his argument was that no new invention would be installed by a man of business unless its savings were available to him to recoup losses of capital abandoned to make way for it; that the patent monopoly would enable him to compel a price adequate for his recoupment; and that in a proceeding like this it was equitable to divide the savings with the consumer and apply the Company's share to reimbursement of the loss by abandonment, meanwhile rating the new property at value new. I have said that there was strength of reason in this plan, but that it involved a matter of administrative policy that was primarily for the State's regulatory body. I have not followed this plan for this reason and for the further reason that it appeared obsolescence could have been foreseen and provided for, and apparently had been provided for. This means that the question of value of the rights must be now considered.

"The evidence is not very full on the part of plaintiff. And due perhaps to plaintiff's position as to obsolescence, there was little cross-examination by the City and no contrary evidence. With oil at 68½ cents a barrel to plaintiff during the years 1912-16, Mr. Bridges estimates the savings under the Jones process at 2½ cents a thousand feet of gas manufactured. (Exhibit 62.) In Table X of his supplemental argument, Mr. Bosley estimates the savings shown by the evidence at 2+ cents for the first two years and over 4 cents for the year 1915-16; or, in sum total, \$103,530.39 for 1913-14, \$132,419.45 for 1914-15 and \$258,557.81 for 1915-16. A just criticism of these estimates is that they give no influence to the

economies due to larger production. Mr. Britton, general manager of plaintiff, speaking of results attained in 1916-17, testifies that the new Jones generators effected a saving of two gallons of oil per thousand feet of gas and over one cent a thousand in labor costs of manufacture. (Tr., 2248 seq.) Projecting the savings over the sixteen remaining years of the letters patent, he computes the aggregate savings at \$7,630,300. (Tr., 2251.) Mr. Vincent computes the present worth on June 30, 1916, of these future savings at \$4,203,300. (Exhibit 67.) While apparently the estimates are made on conservative bases, it is, of course, true that forecasts like this are full of uncertainties; for example, oil may rise to a price prohibitive for gas consumption on the present scale, or other inventions or even substitutes for gas may diminish the value of the Jones patent.

"There is no doubt that these patents are property, and of great value. It is also true, I think, that justice demands that the utility company should profit in some substantial proportion by the economies brought about by its ability in management or its improvements in methods of manufacture. There is no good reason why the consumers should get all the advantages that are the fruit of the genius of these inventors. If by the terms of their employment Mr. Jones and his son had been bound to assign their patents to plaintiff without further compensation, and had done so, the City could not justly claim that the Company should have no part of the savings effected. The patents would have to be valued. But in view of the fact that the Company and the patentees, dealing presumably at arms' length, have reached a figure of about \$46,000 as the value of exclusive rights throughout Northern California, I am as much embarrassed as was plaintiff's counsel in concluding that in San Francisco alone the rights are to be valued for purposes of return at four million dollars or any substantial

fraction of that sum. And how are we to compare in value the full rights obtained by express grant in 1915 and the restricted rights arising by implied license in the prior years? In view of the state of the evidence, it seems to me better to pass the whole matter for future consideration in connection with the rates of later years, when the State Commission can pass on it with full evidence before it. On the record before me I do not see my way clear to add any figure to the rating base on account of these patent rights. . . .

"Objections Nos. 8, 9 and 10 have to do with the valuation of plaintiff's rights under the Jones patents. Plaintiff is incorrect in stating that the Master failed to find the present value of the patent rights. These were allowed in capital value as stated, page 85, at \$46,066.67, the amount paid the grantors in 1915. If the plaintiff had paid the inventors, say \$500,000, or other considerable sum, for these patent rights, there is no reason to doubt that this figure would have been accepted as the valuation for purposes of return. It is not my view that a valuation must follow cost, although it is more apt to do so where the purchase was recently made. I have stated as fully as I could the reasons why I could not find the immensely greater figure which plaintiff claims. Briefly, the evidence was entirely too speculative. There is, after all, in such a policy no particular restriction to enterprise in denying to stockholders the fruits of valuable inventions, because the stockholders do not function in the direction of enterprise. The way to reward enterprise is to pay large sums to inventors, but that is not the question here. In a supplementary argument counsel asks me to apply here the rule which prevails in patent accountings, where, when damages cannot be ascertained by reference to an established royalty, the Master is permitted to determine from all the evidence what would have been a reasonable royalty. The qualification to this rule is, however, that

the Master must have some evidence upon which his mind can work and rely, and that is to a large degree lacking here, save in so far as it is given by the amount of the purchase price. The objections named are accordingly overruled."

Obviously, under the theory accepted below, appellant worsened its situation for rate-making purposes when it reduced the cost of manufacturing gas. Introduction of successful patented inventions enabled the public authorities to lower the rate base and gather all the benefits. The operating plant, made capable of producing gas at smaller cost, was declared less valuable than before. The result indicates error somewhere, either in theory or application of principle.

Obsolescence of one or more stations and perhaps other property theretofore of great value (possibly \$800,000) followed installation of the patents, but the remaining plant plus the patents gave better results. As an operating unit the new combination had greater value than the old; but the court below disregarded the demonstrated worth of the element which wrought this change.

The obsolescence in question did not result from ordinary use and wear. Certainly it could not have been long anticipated—the patents were of recent conception; to provide for it out of previous revenues was not imperative, if possible. Former consumers were not beneficiaries; only subsequent ones could be advantaged.

Our concern is with confiscation. Rate-making is no function of the courts; their duty is to inquire concerning results and uphold the guaranties which inhibit the taking of private property for public use without just compensation under any guise. We may not, therefore, relegate appellant's claim for past services to the future consideration of the State Commission, as the master suggests. After adopting the reduced costs of manufacture for estimating net returns, the court gave no proper

valuation to the inventions which caused the reduction, and thereby permitted property to be taken without just compensation. The amount of money actually paid to the inventors was not the proper measure of worth. Experience had demonstrated a much higher one; and to obtain the benefit of their use appellant sacrificed much.

Installation of the inventions necessitated new outlay of money and abandonment of property theretofore valuable—both were necessary in order that the cost of manufacture might be reduced. If appellant's permissible profits depend upon the lowered costs and it is denied adequate return upon property which made the reduction possible, or recompense for the obsolescence, successful efforts to improve the service will prove extremely disadvantageous to it.

Whether, under the peculiar circumstances here presented, the rate base should be fixed by adding to the agreed inventory some fair valuation of the patent rights, or whether prompt recoupment should be allowed for the obsolescence caused by their introduction, or whether appellant should be saved from actual ultimate loss by some other feasible method, we will not undertake to determine upon the present record. To the end that the issues may be reconsidered in view of this opinion, the decree below is reversed and the cause remanded for such further proceedings as the circumstances require, including another reference to the master if deemed advisable.

Reversed.

MR. JUSTICE HOLMES, dissenting.

I am of opinion that the decree should be affirmed on the main point for reasons that will be stated by my Brother BRANDEIS.

MR. JUSTICE BRANDEIS, dissenting.

These cases were tried together. Each challenges as confiscatory an ordinance of the City of San Francisco

fixing, for a single year, the price to be charged for gas. The rule of *Smyth v. Ames*, 169 U. S. 466, was applied. The evidence, in condensed form, comes before us in a record of 943 pages. The master's original and supplemental reports occupy 131 pages. The master and the court found the rates to be compensatory. Three errors are assigned by the company which relate to depreciation. The facts applicable to the several years differ in part; but the same questions are presented in each. It will tend to clarity to discuss these with reference to the facts of No. 34, which involves the rate for the year beginning July 1, 1913.

First. The depreciation charge allowed for that year, for the plant as a whole, was \$348,853. The company does not complain that this allowance is too small, if treated as an allowance for merely physical observed depreciation. Its claim is that an improved process, which had been introduced at the San Francisco works in 1912, resulted in a saving, during the year 1913-14, of \$103,530 in oil and labor; that in 1913 it had become certain that this process would later render obsolete certain parts of the plant (called stations) which were in use throughout that year; and that, for the purpose of meeting this expected loss in capital through later abandonment of stations, the savings effected by the new process should have been charged against the earnings, and credited to a special depreciation reserve. If, as suggested below, the company's contention is that only one-half of the savings should be credited to this special depreciation reserve, the action of the District Court on this ground is obviously free from objection. For, in fact, there was included in the year's depreciation charge, for obsolescence of these stations, \$64,962, which is more than one-half of the year's savings. But its claim here is that the whole of the savings of the year 1913-14 should have been so applied; and that, therefore, the balance thereof, namely, \$38,568, should

also have been included in this special depreciation charge.¹

The sum (\$348,853) allowed as the depreciation charge for the year 1913-14 was nearly 3 per cent. of the then reproduction cost new of the whole plant, other than land. The master and the court found, as facts, that none of the plant was abandoned during that year; that the change in the process of manufacture was not revolutionary; that in view of the history of the art, such change or improvements, and resulting obsolescence of parts of the plants, should have been foreseen; that, in fact, there had been accumulated, during the four years preceding 1912, as a general reserve for depreciation, the sum of \$2,116,433.95; that this reserve had been charged off by the company to surplus in November, 1911; and that, but for this fact, it would have been available to meet the loss of capital which occurred later through the abandonment of stations.

This alleged error does not present any question of law. Whether more of the savings of the year 1913-14 due to the introduction of the new process should have been allowed as a special depreciation charge for the obsolescence then known to be accruing, is clearly a question of fact. There is much conflict in the theories on which

¹ In this connection, the confiscatory character of the rate rests, according to the test applied, upon the allowance or disallowance of a much smaller sum. For master and court have found that the earnings of the year 1913-14 exceeded 7 per cent. upon the rate-base by more than \$21,000. An additional allowance for depreciation of \$17,000 would, therefore (even on the theory contended for by the company), have rendered the rate compensatory on a 7 per cent. basis. Moreover, a 6 per cent. rate was sustained in *Stanislaus County v. San Joaquin & Kings River Canal & Irrigation Co.*, 192 U. S. 201 (1904); *Knoxville v. Knoxville Water Co.*, 212 U. S. 1 (1909); and *Cedar Rapids Gas Light Co. v. Cedar Rapids*, 223 U. S. 655, 670 (1912).

depreciation should be figured.² There was doubt when the obsolescence would culminate and what would be its extent. There was conflict in the evidence as to the rate to be deemed a fair return. Whether a return of 7 per cent. is the proper test of a compensatory rate must, obviously, depend in part upon whether the return includes any of the risk of obsolescence.³ I cannot say that the master and the court erred in their conclusion of fact that, all things considered, the depreciation charge allowed was adequate. The same is true of the depreciation charges allowed for the years 1914 and 1915.⁴

² The wide differences between engineers as to the proper method to be pursued is well known. See *Southwestern Bell Telephone Co. v. Public Service Commission*, 262 U. S. 276, 294.

³ See Gerard C. Henderson "Railway Valuation and the Courts," 33 Harv. L. Rev. 902, 916, 922, 923; John Bauer, "Valuation of Public Utility Properties," 30 Pol. Sci. Q., 254, 275; R. S. Hale, "Physical Valuation of Public Utilities," 45 Engineering Mag., 161, 163.

⁴ Appellant contends here that, due to the new method of manufacture, property of which the reproduction cost was \$844,355.74, would become obsolete; that the total depreciation allowance covering this property for the three years was only \$275,096; and that the difference—called net loss to the appellant—should be amortized by applying the savings to be effected by the new method of manufacture. But the first abandonment of stations occurred at the end of June, 1915. The estimated loss on the Martin station, then abandoned, was \$237,651. No further supersession occurred during the period of litigation. There was merely the prediction, made at the trial by the company's experts, that the Independent station would be abandoned in December, 1918, and the Potrero plant in December, 1920. Moreover, for the year 1914-15, the depreciation charge allowed was \$372,680. Included in this amount is \$68,198, directly attributable to loss caused by abandonments. The alleged savings from the new process for that period was \$132,419. Thus, the amount allowed exceeded the one-half of the year's saving, which was suggested below as the proper measure of the appropriate charge. The increase in depreciation charge contended for here is \$64,221. But the earnings for this year exceeded 7 per cent. on the

Second. As an alternative to allowing a larger depreciation charge out of the year's savings through the improved process and apparatus, the company urges that the rate-base should have been increased, by adding thereto the value of the right to use the new process at the San Francisco works.⁵ The court apparently adopted this view of the law. It ruled that the company was entitled to a return upon the then value (as part of the rate-base) of the right to use the inventions. It differed from the company only in the estimate of the value. The company's experts declared that the value of this right might be ascertained by capitalizing the average annual savings expected to be effected thereby. So calculated, the value is \$4,203,300. The court found specifically that it could not accept estimated savings as a measure of value; among other reasons, because the amount of savings was dependent in large measure upon the price of crude oil, and that this price fluctuates largely from time to time. It included in the rate-base for 1913-14 the value of the gas generators (at the Metropolitan plant) which had been reconstructed so as to embody the inventions; and found that there was in

rate base by more than \$89,000, leaving a difference more than sufficient to cover this claim. The year 1915-16 can be similarly disposed of. The depreciation charge allowed was \$380,519. The alleged savings from the new process for that year were estimated at \$258,557. The increase in depreciation charge contended for here is \$208,319. But one-half of the year's savings is \$129,279; and the earnings for the year exceeded 7 per cent. on the rate base by \$171,464.

⁵ The process and apparatus had been invented by the company's salaried engineers early in 1912. The cost of experiments were defrayed by it. The utility of the invention was proved in that year, at its expense, by reconstructing, during that year, two of its gas generators and making other changes in plant. In this way the company acquired an implied license to use the inventions. *Wade v. Metcalf*, 129 U. S. 202; *Dable Grain Shovel Co. v. Flint*, 137 U. S. 41. It did not acquire an express license until November 30, 1915; that is, shortly after the patent for the apparatus was granted.

the record no evidence on which it could give to the right to use the inventions a greater value than was allowed. So far as concerns the year 1913-14, the question is, merely, whether on the evidence in the record the value of the reconstructed generators (including, of course, the right to use them) was too small.⁶ It appeared that for the right to use the inventions nothing was paid either during the year 1913-14 or during the year 1914-15; and that for the exclusive right to use them both in San Francisco and throughout a number of counties in northern California, the company paid to the inventors, in November, 1915, \$46,066.68. I cannot say that the master and the District Court erred in the finding of fact by which they valued this item for that year, or in the value assigned to the right in fixing the rate-base for either of the two following years.⁷ This alternative contention of the company presents, obviously, no question of law.

Third. The reproduction cost new of the manufacturing and distributing plant, other than land, was found to be \$12,794,008; the accrued depreciation, \$1,518,390

⁶ The question is not one of continuing importance to the parties. Its correctness depends upon the state of the particular record. Any defect in this record can be avoided in proceedings concerning the rates for any year after June 30, 1916; and since October 29, 1917, the gas rates for San Francisco are fixed, not by city officials, but by the State Railroad Commission.

⁷ The year 1914-1915 presents no change in the situation from the preceding year. For 1915-16 the value of the two new Jones oil gas generators installed in the Potrero plant at a cost of \$241,812.59 is included in the rate-base; and as the value of the right to use the inventions, the \$46,066.68 paid. For this period, therefore, the question is merely whether on the evidence in the record the patents should have been valued at a sum in excess of \$46,066.68. But for both years only a large undervaluation would affect the result, as the master and the court found that during the year 1914-1915 the prescribed rate would yield \$89,446 in excess of a seven per cent. return on the rate-base, and for 1915-1916, an excess of \$171,464.

(as of June 30, 1914). Thus, the property was found to be worth 88.1 per cent. of its then reproduction cost. The company contends that the accrued depreciation should have been set at \$828,916.41; so that the plant was worth 93.7 per cent. of its then reproduction cost. The master employed the "compound interest" or "modified sinking fund" method of estimating accrued depreciation. The plant is in part very old. The depreciation found is but a small percentage of the reproduction cost. The evidence bearing upon the amount to be deducted for accrued depreciation occupies 232 pages of the record. The discussion thereof in the master's report occupies 39 pages. There was a conflict of evidence.

No question of law is presented by this assignment of error.⁸ The company's objection is not to the particular method selected, but that, in applying it, the master included as depreciation what is called theoretical inadequacy and obsolescence. Whether he did is a question of fact. The city denies that the reduction in value made by the master on account of accrued depreciation includes any sum representing expected loss through future abandonment of the stations. It is clear that, if any deduction was made on account of the probable abandonment of the stations, the obsolescence thus provided for was not theoretical. The new process had been introduced two years before the date as of which the valuation was made. On the facts then known, it was expected that the stations would have to be abandoned in the

⁸ We have no occasion to undertake a legal delimitation of the function of a depreciation charge; or to define its legal relations to the depreciation reserves; or to determine whether the loss through the abandonment of a station in 1915 and that expected to result from later abandonments might be set off against the depreciation reserve accumulated shortly before the invention of the new process.

near future. Because it was to be expected (and was not theoretical) the company contended that to offset it more of the year's savings should have been charged against the income of that year. I cannot say that the master and the court erred in their findings of fact as to the amount of accrued depreciation.

This litigation has already extended over eleven years. The record discloses that the cases were presented below by competent counsel with the aid of competent experts, and that they received careful consideration by an able master and an able trial judge. Counsel, master and court have throughout endeavored to apply the rule of *Smyth v. Ames*, 169 U. S. 466. It is not shown that the rule has, in any respect, been departed from. This Court harbors a doubt whether, in applying it, some injustice may not have been done to the company. Is it probable that a nearer approach to justice, as between the parties, will be attained by a continuation of the effort to apply the same rule? To me it seems that the doubt is inherent in the rule itself. It can be overcome only by substituting some other rule for that found to be unworkable. Such other lies near at hand; and it is consistent with the Constitution.

It was settled by *Knoxville v. Knoxville Water Co.*, 212 U. S. 1, that every public utility must, at its peril, provide an adequate amount to cover depreciation. A depreciation charge resembles a life insurance premium. The depreciation reserve, to which it is credited, supplies insurance for the plant against its inevitable decadence, as the life insurance reserve supplies the fund to meet the agreed value of the lost human life. To determine what the amount of the annual life insurance premium should be is a much simpler task than to determine the proper depreciation charge. For life insurance is a co-operative undertaking. The premium to be fixed is not that required by the probable duration of the life of a

single insured individual, but that required by the average expectancy of life of men or women of the given age. Moreover, for human lives, mortality tables have been constructed which embody the results of large experience and long study. By their use the required premium may be fixed with an approximation to accuracy. But, despite the relative simplicity of the problem, it was found that the variables leave so wide a margin for error that premiums fixed in accordance with mortality tables work serious injustice either to the insurer or to the insured. Although the purpose was to charge only the appropriate premium, the transaction resulted sometimes in bankruptcy of the insurer; sometimes in his securing profits which seemed extortionate; and, rarely, in his receiving only the intended fair compensation for the service rendered. Because every attempt to approximate more nearly the amount of required premium proved futile, justice was sought by another route. Ultimately, strictly mutual insurance was adopted. Under it, the premium charged is made clearly ample; and the part thereof which proves not to have been needed enures in some form to the benefit of him who paid it. Compare *Penn Mutual Life Insurance Co. v. Lederer*, 252 U. S. 523, 524, 525.

Legal science can solve the problem of the just depreciation charge for public utilities in a similar manner. Under the rule which fixes the rate base at the amount prudently invested, the inevitable errors incident to fixing the year's depreciation charge do not result in injustice either to the utility or to the community. If, when plant must be replaced, the amount set aside for depreciation proves to have been inadequate, and investment of new capital is required, the utility is permitted to earn the annual cost of the new capital. If, on the other hand, the amount set aside for depreciation proves to have been excessive, the income from the surplus re-

serve operates as a credit to reduce the current capital charge which the rates must earn. If a new device is adopted which involves additional investment (to buy a new plant or a patent right) the company's investment, on which the return must be paid, is increased by that amount. If the new device does not involve new investment, but the innovation involves increased current payments (like royalties for use of a process) the additional disbursement is borne by the community as an operating expense. The cost of a scrapped plant is carried as part of the investment on which a return must be paid unless and until it has been retired, that is fully paid for, out of the depreciation reserve. Thus, justice both to the owners of the utility and to the public is assured.
